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EXAMINER
AUGHENBAUGH, WALTER

ART UNIT	PAPER NUMBER
1772	

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/988,283	IIZUKA ET AL.	
	Examiner	Art Unit	
	Walter B Aughenbaugh	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-12,14-21,23-25,27-36,38-45 and 47-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-12,14-21,23-25,27-36,38-45 and 47-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *10* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Acknowledgement of Applicant's Amendments

1. The cancellation of claims 2, 13, 22, 26, 37 and 46 in Paper 7 filed June 20, 2003 has been acknowledged by Examiner.

2. The amendments made in claims 1, 4, 6, 8, 10-12, 19, 23-25, 28, 30, 32, 34-36, 43, 47 and 48 given on pages 1-6 and 18-23 of Paper 7 have been received and considered by Examiner.

3. The amendments made in claims 12, 16-18, 23, 36, 40-42 and 47 given on pages 1-3 and 8-10 of Paper 9 filed July 2, 2003 have been received and considered by Examiner.

4. New claims 49 and 50 presented on pages 3-4 of Paper 9 have been received and considered by Examiner.

WITHDRAWN OBJECTIONS

5. The objection to claims 13-18 and 37-42 made of record in paragraph 1 of Paper 5 has been withdrawn due to Applicant's amendments in Paper 9.

6. The objection to claims 2, 22, 26 and 46 made of record in paragraph 2 of Paper 5 has been withdrawn due to Applicant's amendments in Paper 7.

WITHDRAWN REJECTIONS

7. The 35 U.S.C. 112, first paragraph rejection of claims 23 and 47 made of record in paragraph 4 of Paper 5 has been withdrawn due to Applicant's arguments on pages 8-9 of Paper 7.

8. The 35 U.S.C. 112, second paragraph rejection of claims 1-13, 15-22, 24-37, 39-46 and 48 made of record in paragraph 6 of Paper 5 has been withdrawn due to Applicant's amendments in Papers 7 and 9.

9. The 35 U.S.C. 112, second paragraph rejection of claims 23 and 47 made of record in paragraph 6 of Paper 5 has been withdrawn due to Applicant's arguments on pages 8-9 of Paper 7.

10. The 35 U.S.C. 112, second paragraph rejection of claims 14 and 38 made of record in paragraph 6 of Paper 5 has been withdrawn due to Applicant's arguments on the top of page 6 of Paper 9 and the IDS submitted June 26, 2003 (Paper 10).

11. The 35 U.S.C. 102(b) rejection of claims 12 and 36 made of record in paragraph 8 of Paper 5 has been withdrawn due to Applicant's amendments in Paper 7 and 9.

12. The 35 U.S.C. 102(b) rejection of claims 19, 20, 43 and 44 made of record in paragraph 9 of Paper 5 has been withdrawn due to Applicant's amendments in Paper 7.

13. The 35 U.S.C. 103(a) rejection of claims 1-5 and 25-29 made of record in paragraph 11 of Paper 5 has been withdrawn due to Applicant's amendments in Paper 7.

14. The 35 U.S.C. 103(a) rejection of claims 8-11 and 32-35 made of record in paragraph 13 of Paper 5 has been withdrawn due to the fact that Iizuka et al. is not available as a 35 U.S.C. 103(a) reference as argued by Applicant on pages 13-14 of Paper 7.

15. The 35 U.S.C. 103(a) rejection of claims 21, 22, 45 and 46 made of record in paragraph 14 of Paper 5 has been withdrawn due to the fact that Iizuka et al. is not available as a 35 U.S.C. 103(a) reference as argued by Applicant on pages 13-14 of Paper 7.

16. The 35 U.S.C. 103(a) rejection of claims 23, 24, 47 and 48 made of record in paragraph 15 of Paper 5 has been withdrawn due to Applicant's amendments in Paper 7.

REPEATED REJECTIONS

17. The 35 U.S.C. 103(a) rejection of claims 6, 7, 30 and 31 made of record in paragraph 12 of Paper 5 has been repeated for the reasons previously made of record in paragraph 12 of Paper 5, taking into consideration the new rejection to claims 1 and 25 made of record in this Office Action (Paper 11).

NEW REJECTIONS

Claim Rejections - 35 USC § 102

18. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

19. Claims 12, 14, 15, 17, 18, 36, 38, 39, 41, 42, 49 and 50 are rejected under 35 U.S.C. 102(b) as being anticipated by Horgan et al.

In regard to claims 12 and 36, Horgan et al. teach an electrostatographic imaging member comprising a supporting substrate layer (corresponding to the base body for a photosensitive drum as claimed) having an electrically conductive ground strip layer (col. 31, lines 26-30). Horgan et al. teach that the base body is cylindrical (col. 4, lines 20-25). In regard to claim 36, Horgan et al. teach that at least one electrophotographic imaging layer (corresponding to the photosensitive layer formed on an outer peripheral surface of said cylindrical base body as claimed in claim 36) is adjacent the supporting substrate layer (col. 31, lines 26-31); the combination of the at least one electrophotographic imaging layer and the supporting substrate layer constitutes the photosensitive drum as claimed in claim 36. Horgan et al. teach that the

ground strip layer conductive composition comprises a binder resin and an inorganic filler that is microspherical inorganic material in the form of a plurality of spherical particles having an average particle size of less than about 10 μm, a range that overlaps with the claimed range of 50 μm or less (col. 15, lines 22-30 and col. 16, lines 9-27). The limitation "which is obtained by molding a conductive resin composition into a cylindrical shape" has been given little patentable weight since the method of forming the base body is not germane to the issue of patentability of the base body itself. The limitation "for reinforcement" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987).

In regard to claims 14 and 38, Horgan et al. teach that the inorganic filler is crystalline particles of any suitable shape such as a granular or elliptical shape having a relatively smooth outer surface and formed of silicon dioxide (which is a glass composition) (col. 16, line 65-col. 17, line 23). The structure of the particles taught by Horgan et al., i.e. particles of any suitable shape such as a granular or elliptical shape having a relatively smooth outer surface, corresponds to that of a bead, and since the beads are formed of silicon dioxide, Horgan et al. teach glass beads as the inorganic filler.

In regard to claims 15 and 39, Horgan et al. teach that the inorganic filler is present in a range of from about 5 to about 20 percent by weight based on the total weight of the conductive composition, a range that overlaps with the claimed range of 10 to 25 wt % (col. 17, lines 24-29).

In regard to claims 49 and 50, Horgan et al. teach an electrostatographic imaging member comprising a supporting substrate layer (corresponding to the base body for a photosensitive drum as claimed) having an electrically conductive ground strip layer (col. 31, lines 26-30). Horgan et al. teach that the base body is cylindrical (col. 4, lines 20-25). In regard to claim 50, Horgan et al. teach that at least one electrophotographic imaging layer (corresponding to the photosensitive layer formed on an outer peripheral surface of said cylindrical base body as claimed in claim 50) is adjacent the supporting substrate layer (col. 31, lines 26-31); the combination of the at least one electrophotographic imaging layer and the supporting substrate layer constitutes the photosensitive drum as claimed in claim 50. Horgan et al. teach that the ground strip layer conductive composition comprises a binder resin and an inorganic filler that is a plurality of inorganic flakes (col. 15, lines 22-30 and col. 16, lines 9-27). The limitation "which is obtained by molding a conductive resin composition into a cylindrical shape" has been given little patentable weight since the method of forming the base body is not germane to the issue of patentability of the base body itself. The limitation "for reinforcement" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987).

In regard to claims 17 and 41, Horgan et al. teach that the flake inorganic material is aluminum (col. 16, line 65-col. 17, line 4).

In regard to claims 18 and 42, Horgan et al. teach that the flake inorganic filler is present in a range of from about 5 to about 20 percent by weight based on the total weight of the

conductive composition, a range that overlaps with the claimed range of 10 to 25 wt % (col. 17, lines 24-29).

20. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

21. Claims 8-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Sakogawa et al.

Sakogawa et al. teach a conductive roller (corresponding to the base body as claimed and also claimed as having a cylindrical shape) (col. 9, lines 6-17) formed of a resin composition comprising a resin base material and a conductive agent (col. 1, line 52-col. 2, line 17). Sakogawa et al. teach that the conductive agent is carbon black having a dibutyl phthalate (DBP) oil absorption amount of 50 to 300 ml/100g (col. 4, line 46-col. 5, line 6), a range that overlaps with the claimed range of 130 ml/100g or more. The limitation "which is obtained by molding a conductive resin composition into a cylindrical shape" has been given little patentable weight since the method of forming the base body is not germane to the issue of patentability of the base

body itself. The limitation "for a photosensitive drum" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987). In regard to claim 9, Sakogawa et al. teach that the content of the carbon black is in a range of 4 to 50, and more preferably, 5 to 20 parts by weight per 100 parts by weight of the resin (col. 5, lines 6-10), a range that overlaps with the claimed range of 30 wt% or less. In regard to claim 10, Sakogawa et al. teach that the resin comprises nylon 6 (col. 7, lines 25-28 and 52-63), which is a polyamide resin obtained from ε-caprolactam, as evidenced by US 6,221,547 to Iizuka et al. (col. 3, lines 26-33 of Iizuka et al.). In regard to claim 11, the carbon black of the conductive resin of Sakogawa et al. is an inorganic filler. The limitation "for reinforcement" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987).

Claim Rejections - 35 USC § 103

22. Claims 1, 3-5, 25, and 27-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. in view of Nishimuro et al.

Matsuura et al. teach a polymer sheet formed of mixtures of polyamide and polypropylene or polyphenylene sulfide (col. 2, lines 29-37). The mixtures of polyamide and polypropylene or polyphenylene sulfide taught by Matsuura et al. correspond to the resin base material as claimed by Applicants. Matsuura et al. teach that the sheet is stable in regard to the

effect of water vapor with the passage of time (col. 1, line 64-col. 2, line 2); Matsuura et al. therefore teach that the polypropylene or polyphenylene sulfide is a low water absorption resin. Matsuura et al. teach the addition of conductive powder to polymer sheets (col. 1, lines 11-13). In regard to claim 25, Matsuura et al. teach the inclusion of a photoconductor layer on the peripheral surface of the sheet of the resin base material for the intended uses as a electrostatic recording sheet or electrophotographic photosensitive material (col. 5, lines 19-27). The phrase in claims 1 and 25 "which is obtained by molding a conductive resin into a cylindrical shape" is a method limitation which has been given little patentable weight since the method of forming the base body is not germane to the issue of patentability of the base body itself.

Matsuura et al. fail to teach that the sheet is in cylindrical form, that the low water absorption resin has a water absorption percentage in a range of 0.3% or less and, in regard to claims 5 and 29, that the content of the low water absorption resin is 1 to 70 wt % on the basis of the total weight of the resin base material.

Nishimuro et al., however, disclose a cylindrical base body (item 1, Figure 1) for a photosensitive drum that is molded from a resin to which a conductive agent is added (col. 2, lines 64-67). In regard to claims 4 and 28, Nishimuro et al. disclose that polyamides such as nylon 6 or nylon 66 are suitable as the resin (col. 3, lines 3-8). Nishimuro et al. also disclose that a photosensitive layer (item 3, Figure 1) is formed on the outer peripheral surface of the cylindrical base body. Nishimuro et al. disclose that the photosensitive drum is used in electrostatic recording processes (col. 1, lines 4-9). Therefore, one of ordinary skill in the art would have recognized to have formed the conductive mixed resin of Matsuura et al. into a cylinder, since it is notoriously well known to one of ordinary skill in the art to use cylindrical

moldings of conductive resins as a base body of electrostatic recording devices as taught by Nishimuro et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the conductive mixed resin of Matsuura et al. into a cylinder, since it is notoriously well known to one of ordinary skill in the art to use cylindrical moldings of conductive resins as a base body of electrostatic recording devices as taught by Nishimuro et al.

Furthermore, in regard to claims 1, 5, 25 and 29, since Matsuura et al. teach that the polymer sheet is formed of mixtures of polyamide and the low water absorption resins polypropylene or polyphenylene sulfide (col. 2, lines 29-37), the disclosure of Matsuura et al. encompasses all the possible amounts of the low water absorption resin relative to the polyamide. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have varied the content of the low water absorption resin relative to the weight of the polyamide and also relative to the total weight of the resin base material in order to achieve the optimum water absorption percentage depending on the desired end result, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art in the absence of unexpected results. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

23. Claims 6, 7, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Matsuura et al. in view of Nishimuro et al., and in further view of Coran et al.

Matsuura et al. and Nishimuro et al. teach the cylindrical base body and photosensitive layer as discussed above. Matsuura et al. and Nishimuro et al. fail to teach that the conductive resin composition further comprises a compatibility enhancing agent for enhancing a

compatibility between the polyamide resin and the low water absorption resin. Coran et al., however, disclose a thermoplastic composition comprising a polyolefin polymer, a nylon (a polyamide polymer) and a functionalized olefin polymer (col. 8, lines 29-42). Coran et al. disclose that maleic acid modified polypropylene compatibilizes polypropylene and nylon (polyamide) (col. 8, lines 8-10). The maleic acid modified polypropylene taught by Coran et al. is a functionalized olefin polymer. Therefore, one of ordinary skill in the art would have recognized to have added maleic acid modified polypropylene to the mixture of polypropylene and polyamide taught by Matsuura et al. in order to compatibilize the mixture of polypropylene and polyamide as taught by Coran et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have added maleic acid modified polypropylene to the mixture of polypropylene and polyamide taught by Matsuura et al. in order to compatibilize the mixture of polypropylene and polyamide as taught by Coran et al.

24. Claims 16 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horgan et al. in view of Yoshinaka et al.

Horgan et al. teach the base body and photosensitive drum as discussed above. Horgan et al. fail to teach that the flake inorganic material is in the form of flakes each having an aspect ratio (length/thickness) in a range of 10 to 70. Yoshinaka et al., however, teach an electrophotographic photosensitive member comprised of a cylindrical support (base body) and a photosensitive layer formed on an outer peripheral surface of the base body (col. 2, lines 53-56). Yoshinaka et al. teach that the support satisfies the strength requirements for a support (col. 10, lines 42-46). Yoshinaka et al. teach that the support is composed of a resin and an inorganic

filler (tetrapod-like zinc oxide whiskers, col. 10, lines 43-44) that provide the required strength to the support (col. 10, lines 42-44, Figures 1 and 3, and col. 12, lines 25-55). Yoshinaka et al. teach that the zinc oxide whiskers are comprised of a central part and extending to four different axial directions from this central part (col. 11, lines 61-64). Examiner interprets the morphology of the "tetrapod-like zinc oxide whiskers" taught by Yoshinaka et al. to be a flake morphology. Yoshinaka et al. teach that the whiskers have a central part and four separate needle crystals, where the diameter of the base of the needle crystals (equivalently the thickness as claimed) is 0.7 to 14 μm and the length of the needle crystals from base to the top of the needle crystal is from 3 to 200μm so that both the dispersion of the flakes and the stability in the electrical conductivity of the composition are suitable (col. 11, line 61 – col. 12, line 12). Since the claimed aspect ratio range is completely encompassed by this teaching of Yoshinaka et al., one of ordinary skill in the art would have recognized to have fabricated the flakes of Horgan et al. such that the flakes have an aspect ratio (length/thickness) in the range of 10 to 70 so that both the dispersion of the flakes and the stability in the electrical conductivity of the composition are suitable as taught by Yoshinaka et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have fabricated the flakes of Horgan et al. such that the flakes have an aspect ratio (length/thickness) in the range of 10 to 70 so that both the dispersion of the flakes and the stability in the electrical conductivity of the composition are suitable as taught by Yoshinaka et al.

25. Claims 19, 20, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minemura et al. in view of Kito et al. (Patent Abstracts of Japan, publication number 62-141565).

In regard to claim 19, Minemura et al. teach a photoreceptor comprising an electroconductive substrate and a photoconductive layer (therefore the electroconductive substrate corresponds to the base body for a photosensitive drum as claimed in claim 19) (col. 5, lines 40-46). Minemura et al. teach that the base body is cylindrical (see photoreceptor drum, item 1, Fig. 1 and col. 20, lines 16-17). In regard to claim 43, the photoconductive layer of Minemura et al. corresponds to the photosensitive layer formed on an outer peripheral surface of said cylindrical base body as claimed in claim 43; the combination of the photoconductive layer and the electroconductive substrate constitutes the photosensitive drum as claimed in claim 43. Minemura et al. teach that the base body is formed from a composition comprising resin and an electroconductive powder such as metal oxide (corresponding to the inorganic filler as claimed) (col. 5, lines 47-54 and col. 6, lines 9-14). Minemura et al. teach that the base body has a surface roughness such that a center line average height Ra is approximately from 0.05 to 0.80 μm (col. 7, lines 59-60 and col. 8, lines 8-10), a range that overlaps with the claimed range of less than 0.2 μm, and that the maximum height Rmax is less than 0.8μm (see Table 1, col. 21, lines 22-44, wherein Rmax values of 0.3 and 0.5 are included). Minemura et al. teach that excellent properties were attained with specimens having the Ra and Rmax values claimed in the instant application (col. 29, lines 10-28, Table 2, col. 30 and Table 3, col. 31). The limitation "which is obtained by molding a conductive resin composition into a cylindrical shape" has been given little patentable weight since the method of forming the base body is not germane to the issue of

patentability of the base body itself. The limitation "for reinforcement" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987).

Minemura et al. fail to teach that the inorganic filler is a fibrous inorganic material in the form of fibers each having a length ranging from 8 to 50 μm and a diameter ranging from 0.1 to 5 μm.

Kito et al., however, disclose a cylindrical electrophotographic sensitive base body formed from a resin having a photosensitive layer formed on an outer peripheral surface of the base body. Kito et al. disclose that a conductive powder in the form of whiskers that are single crystal fibers of potassium titanate are included in the resin in order to render the resin conductive. Kito et al. teach that the average fiber length of the potassium titanate fibers is 8-20 microns and the average fiber diameter is 0.2-0.7 microns, ranges that overlap with those of the fibers claimed in the instant application. Therefore, one of ordinary skill in the art would have recognized to have used the potassium titanate fibers of Kito et al. as the conductive powder of the base body of Minemura et al., since it is notoriously well known to use potassium titanate fibers having an average fiber length of 8-20 μm and an average fiber diameter of 0.2-0.7 μm as an electroconductive filler for resin in order to render the resin electroconductive as taught by Kito et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the potassium titanate fibers of Kito et al. as the conductive powder of

the base body of Minemura et al., since it is notoriously well known to use potassium titanate fibers having an average fiber length of 8-20 μm and an average fiber diameter of 0.2-0.7 μm as an electroconductive filler for resin in order to render the resin electroconductive as taught by Kito et al.

26. Claims 21 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minemura et al. in view of Kito et al. (Patent Abstracts of Japan, publication number 62-141565) and in further view of Horgan et al.

Minemura et al. and Kito et al. teach the base body and photosensitive drum as discussed above. Minemura et al. and Kito et al. fail to explicitly teach that the content of the fibrous inorganic material is in a range of 10 to 25 wt% on the basis of the total weight of the conductive resin composition. Horgan et al., however, disclose an electrostatographic imaging member comprising a supporting substrate layer (corresponding to the base body for a photosensitive drum as claimed) having an electrically conductive ground strip layer (col. 31, lines 26-30) formed from a conductive resin composition that is rendered conductive by conductive filaments (i.e. fibers) that are present in an amount of less than 35 wt% based on the total weight of the conductive resin composition so that the ground strip layer has a suitable flexibility (col. 16, lines 9-64). Therefore, one of ordinary skill in the art would have recognized to have used the fibers of Kito et al. as the conductive powder of the base body of Minemura et al. in the amount of less than 35 wt% (such as the range of 10-25 wt. % as claimed) based on the total weight of the composition in order to render the composition conductive while also providing the base body with a suitable flexibility as taught by Horgan et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the fibers of Kito et al. as the conductive powder of the base body of Minemura et al. in the amount of less than 35 wt% (such as the range of 10-25 wt. % as claimed) based on the total weight of the composition in order to render the composition conductive while also providing the base body with a suitable flexibility as taught by Horgan et al.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimal concentration of conductive fiber based on the total weight of the resin composition in regard to the balance between conductivity and flexibility as taught by Horgan et al. depending on the desired end result, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art in the absence of unexpected results. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

27. Claims 23, 24, 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horgan et al. in view of Mohri et al.

In regard to claims 23 and 47, Horgan et al. teach an electrostatographic imaging member comprising a supporting substrate layer (corresponding to the base body for a photosensitive drum as claimed) having an electrically conductive ground strip layer (col. 31, lines 26-30). Horgan et al. teach that the base body is cylindrical (col. 4, lines 20-25). In regard to claim 47, Horgan et al. teach that at least one electrophotographic imaging layer (corresponding to the photosensitive layer formed on the cylindrical base body as claimed in claim 47) is adjacent the supporting substrate layer (col. 31, lines 26-31); the combination of the at least one electrophotographic imaging layer and the supporting substrate layer constitutes the

photosensitive drum as claimed in claim 47. Horgan et al. teach that the resin composition consists essentially of polyamide resin (col. 15, lines 31-45). Horgan et al. teach that the ground strip layer preferably has a smooth outer surface to minimize the abrasion of contacting devices to consequently maximize the life of the contacting devices (col. 17, lines 14-23).

Horgan et al. fail to teach that the resin composition has a factor tan δ in a range of 0.05 or more.

Mohri et al., however, disclose an image receiving sheet for electrophotography having an image receiving layer (item 42, Fig. 1) formed on a base (item 41, Fig. 1) (col. 1, lines 35-39, col. 8, lines 34-40). Mohri et al. disclose that the resin of the image receiving layer is polyamide (col. 9, lines 23-27). Mohri et al. disclose that the surface of the image receiving sheet on the image side (i.e. the surface of the image receiving layer) must be smooth (col. 1, lines 35-40). Mohri et al. disclose that the image receiving layer has a loss tangent (equivalently, tan δ) of 0.01 to 10 and that the smoothness of the surface of the image receiving layer is unsatisfactory for an image receiving layer tan δ value of less than 0.01 (col. 18, line 64-col. 19, line 11). Mohri et al. further disclose that an image receiving sheet having a tan δ value of 0.01 to 10 has excellent surface smoothness (col. 64, lines 29-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the tan δ value between 0.01 and 10 of the polyamide of Horgan et al. that achieves the optimal smoothness of the ground strip layer depending on the desired end result as taught by Mohri et al. since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art in the absence of unexpected results. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

In further regard to claims 23 and 47, The limitation "which is obtained by molding a conductive resin composition into a cylindrical shape" has been given little patentable weight since the method of forming the base body is not germane to the issue of patentability of the base body itself.

In regard to claims 24 and 48, Horgan et al. teach that the ground strip layer conductive composition comprises an inorganic filler (col. 15, lines 22-30 and col. 16, lines 9-27). The limitation "for reinforcement" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987).

28. Claims 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakogawa et al. in view of Horgan et al.

Sakogawa et al. teach the base body as discussed above. Sakogawa et al. teach that the base body (i.e. the conductive roller as taught by Sakogawa et al.) is used as a charged roller along with a photosensitive material such as toner in a laser printer (col. 9, lines 6-17). Sakogawa et al., fail to explicitly teach that a photosensitive layer is formed on an outer peripheral surface of the cylindrical base body to form a photosensitive drum. Horgan et al., however, disclose an electrostatographic imaging member comprising a supporting substrate layer (corresponding to the base body for a photosensitive drum as claimed) having an electrically conductive ground strip layer (col. 31, lines 26-30). Horgan et al. disclose that the base body is cylindrical (col. 4, lines 20-25) and that at least one electrophotographic imaging layer (corresponding to the photosensitive layer formed on an outer peripheral surface of said cylindrical base body as

claimed) is adjacent the supporting substrate layer (col. 31, lines 26-31); the combination of the at least one electrophotographic imaging layer and the supporting substrate layer constitutes the photosensitive drum as claimed. Therefore, one of ordinary skill in the art would have recognized to have applied the photosensitive material of Sakogawa et al. to the base body of Sakogawa et al. such that the photosensitive material constitutes a layer adjacent to the base body as taught by Horgan et al. since it is notoriously well known to apply a layer of photosensitive material adjacent a conductive base body in order to form an imaging member (i.e. a photosensitive drum as claimed) as taught by Horgan et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have applied the photosensitive material of Sakogawa et al. to the base body of Sakogawa et al. such that the photosensitive material constitutes a layer adjacent to the base body as taught by Horgan et al. since it is notoriously well known to apply a layer of photosensitive material adjacent a conductive base body in order to form an imaging member as taught by Horgan et al.

In further regard to claim 32, The limitation "which is obtained by molding a conductive resin composition into a cylindrical shape" has been given little patentable weight since the method of forming the base body is not germane to the issue of patentability of the base body itself.

In regard to claim 33, Sakogawa et al. teach that the content of the carbon black is in a range of 4 to 50, and more preferably, 5 to 20 parts by weight per 100 parts by weight of the resin (col. 5, lines 6-10), a range that overlaps with the claimed range of 30 wt% or less. In regard to claim 34, Sakogawa et al. teach that the resin comprises nylon 6 (col. 7, lines 25-28 and

52-63), which is a polyamide resin obtained from ε-caprolactam, as evidenced by US 6,221,547 to Iizuka et al. (col. 3, lines 26-33 of Iizuka et al.). In regard to claim 35, the carbon black of the conductive resin of Sakogawa et al. is an inorganic filler. The limitation "for reinforcement" is an intended use phrase that has not been given patentable weight, since it has been held that a recitation with respect to the manner in which a claimed article is intended to be employed does not differentiate the claimed article from a prior art article satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQd 1647 (1987).

ANSWERS TO APPLICANT'S ARGUMENTS

29. Applicant's arguments on pages 11-13 of Paper 7 regarding the 35 U.S.C. 103(a) rejection of claims 1-5 and 25-29 over Matsuura et al. in view of Nishimuro et al. have been fully considered but are not persuasive.

One of ordinary skill in the art would have been motivated to have varied the amount of the low water absorption resin relative to the amount of the polyamide resin, and to have consequently varied the water absorption percentage of the resin base material by the teaching of Matsuura et al. that the polymer sheet is formed of mixtures of polyamide and the low water absorption resins polypropylene or polyphenylene sulfide (col. 2, lines 29-37). The disclosure of Matsuura et al. (mixtures of polyamide and the low water absorption resins polypropylene or polyphenylene sulfide) encompasses all the possible amounts of the low water absorption resin relative to the polyamide and therefore one of ordinary skill in the art is consequently motivated (more accurately, taught) to use a resin composition having any amount of the low water absorption resin relative to the polyamide. The case law upon which Applicant relies focuses on what "might be characterized as routine experimentation"; Examiner has removed the basis of

"routine experimentation" from the rejection in this Office Action. Matsuura et al. does indeed recognize the parameter to be optimized (i.e. the amount of the low water absorption resin relative to the amount of the polyamide resin, and consequently the water absorption percentage of the resin base material) as discussed earlier in this paragraph.

30. The remainder of Applicant's arguments presented on pages 10-11 and 13-16 of Paper 7 are moot due to the withdrawal of the rejections made of record in Paper 5 to claims 12, 19, 20, 36, 43 and 44; 8-11 and 32-35; 19, 21, 22, 43, 45 and 46; and 23, 24, 47 and 48 in this Office Action (Paper 11).

Conclusion

31. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter B. Aughenbaugh whose telephone number is 703-305-4511. The examiner can normally be reached on Monday-Thursday from 9:00am to 6:00pm and on alternate Fridays from 9:00am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on 703-308-4251. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

wba
09/05/03 WBA.

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

9/5/03